

The Kentucky Transportation Cabinet (KYTC) has long recognized the importance of planning in ensuring that aviation fulfills its role in the overall statewide transportation system. Through the Kentucky Aviation Department (KDA), KYTC has undertaken numerous studies that examine various important aspects of the state aviation system. The aim of this study, the Kentucky Statewide Aviation System Plan (SASP), is to analyze the state's airport system, assess the system's condition, and develop a plan for meeting the system's current and future needs.

This first chapter of the Kentucky SASP briefly summarizes the findings, results, and recommendations described in more detail in succeeding chapters of this report. The other chapters summarized are:

- Chapter 2 – Goals, Objectives, and Performance Measures
- Chapter 3 – Kentucky Airport System Inventory
- Chapter 4 – Aviation Trends and Issues
- Chapter 5 – Unique Aspects of Aviation in Kentucky
- Chapter 6 – Forecast of Aviation Demand
- Chapter 7 – Airport Economic Evaluation
- Chapter 8 – Airport Role Analysis and Benchmarks
- Chapter 9 – System Evaluation – Stewardship
- Chapter 10 – System Evaluation – Facilities and Services
- Chapter 11 – System Evaluation – Geographic Coverage and Gaps
- Chapter 12 – Recommended System and Cost Estimates



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Chapter 2 – Goals, Objectives, and Performance Measures

This chapter sets out the purpose behind the Kentucky Statewide Aviation System Plan (SASP). It starts with the mission of the KDA:

The mission of the Kentucky Department of Aviation is to provide a safe and secure air transportation system that ensures the mobility of people and goods, enhances economic prosperity, and preserves the quality of our environment and communities.

With this mission in mind, KDA developed seven goals for the SASP. Those goals are:

- Goal 1: Help KYTC assess how the Kentucky airport system provides mobility to people.
- Goal 2: Help KYTC assess the safety of the Kentucky airport system.
- Goal 3: Help KYTC assess the security of the Kentucky airport system.
- Goal 4: Help KYTC assess how the Kentucky airport system contributes to and maintains the economic prosperity of Kentucky.
- Goal 5: Help KYTC assess how the Kentucky airport system contributes to preserving the quality of the environment.
- Goal 6: Help KYTC assess maintenance needs at system airports.
- Goal 7: Help KYTC assess in a qualitative fashion how the Kentucky airport system contributes to preserving the quality of Kentucky communities.

For each goal, one or more objectives were developed to assist in assessing progress toward the goal. These objectives were specific in nature, with each usually having an empirical performance measure associated with it. These objectives and performance measures covered individual airports, components of the airport system, and the entire airport system. An exception was made for Goal 7 due to the qualitative nature of that goal.

More details on the goals and objectives of this study are available in Chapter 2 of this report.

Chapter 3 – Kentucky Airport System Inventory

As with any system plan, this study depended upon a reliable set of base data collected from each system airport. This inventory effort consisted of several steps and resources. The initial step involved identifying the airports in the system that were to be analyzed as part of this study. **Figure 1-1** shows the 59 airports in the Kentucky system. Figure 1-1 also shows which airports are in the FAA’s National Plan of Integrated Airport Systems (NPIAS) and how those airports are classified as either commercial service, reliever, or general aviation. One exception is Bowling Green-Warren County Regional Airport, which the FAA’s NPIAS classifies as a general aviation airport. However, since commercial airline service started at Bowling Green-Warren County Regional Airport in 2016, after the



publication of the most recent FAA NPIAS report, KDA opted to treat it as a commercial service airport.



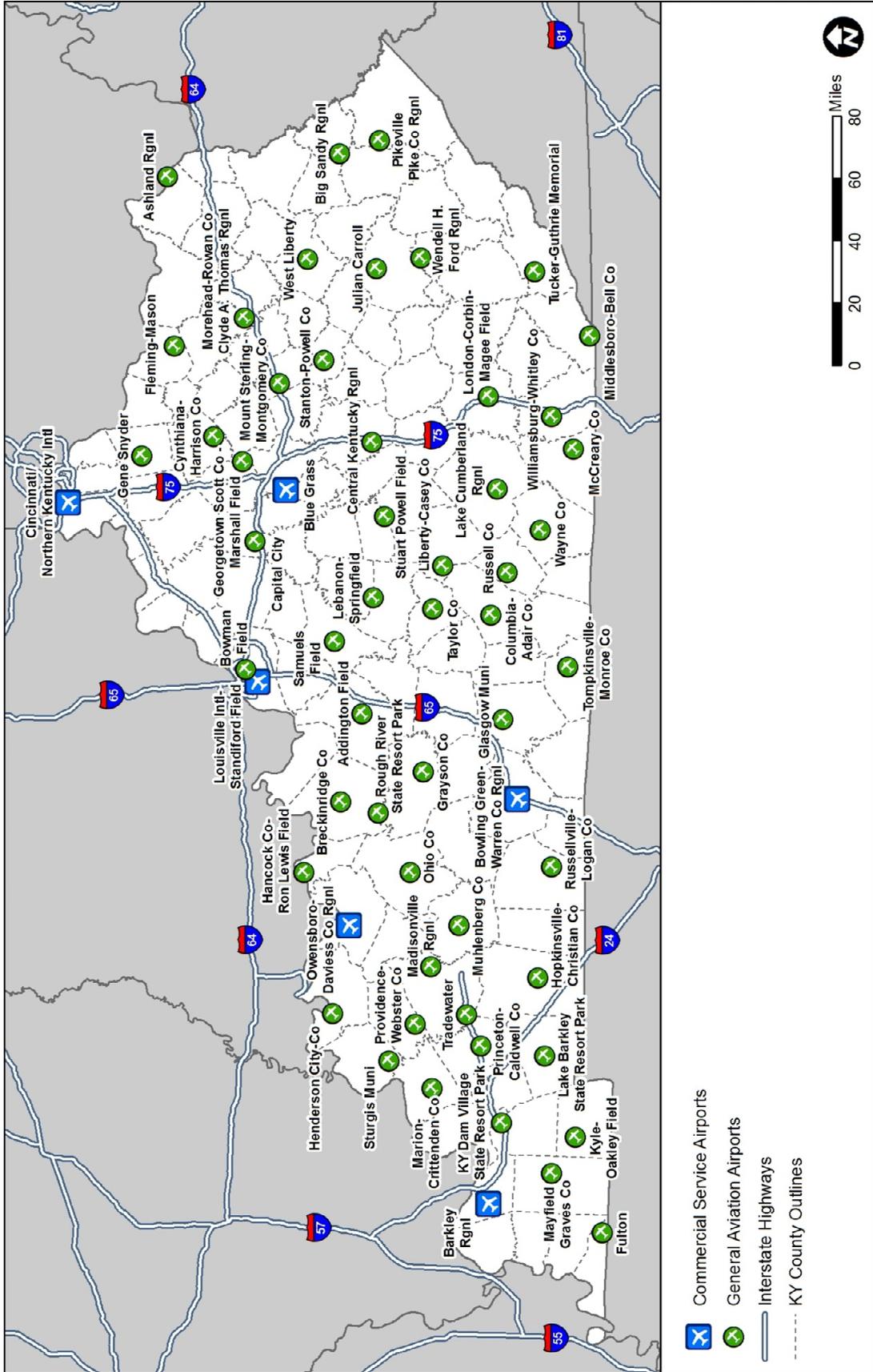
The next step was preparing the Airport Inventory and Data Survey, a comprehensive survey form that was sent to each of Kentucky's 59 public-use airports. Airport surveys were pre-filled with facility and service data if that data was available from sources such as the Federal Aviation Administration (FAA) 5010 Airport Master Records and instrument approach procedure charts. Each airport was then visited by a member of the consultant team to confirm and supplement data collected by the survey effort. Upon completion of

inventory surveys and airport visits, the system inventory was further supplemented through sources such as satellite imagery, airport master plans, airport layout plans (ALPs), KYTC records, and airport websites.

Once the data was compiled, it was verified as part of an overall quality control process. Efforts were made to fill in missing data by contacting the airport manager and consulting secondary sources where applicable. The inventory chapter summarized the system inventory data with a number of tables and graphs. Complete data by airport was compiled in Appendix A.

More details on the inventory of system airports are available in Chapter 3 of this report.

Figure 1-1
Public-Use Airports in Kentucky



Chapter 4 – Aviation Trends and Issues

In assessing an airport system, it is useful to begin by examining current trends and issues affecting aviation. This chapter explored aviation trends and issues in four broad areas:

- General Aviation Trends
- Air Cargo Trends
- Multimodal Issues
- Technology Trends

General Aviation Trends

There are a number of trends in general aviation to consider when assessing an airport system, including the sales of new general aviation aircraft, the number of active general aviation aircraft, the number of pilots, and the future of avgas. The historic trends in each of these areas is analyzed in detail in this chapter, illustrating the cyclical nature of the general aviation industry and highlighting segments that tend to outperform the overall pattern, such as the growth in influence of business jets over the years. Data specific to Kentucky shows that most of these trends are mirrored in the Commonwealth. A notable exception is the number of student pilots in Kentucky, which is trending upward in contrast to national numbers.



The section on avgas summarizes how pressure to remove its lead additive and relying on a single worldwide supplier of that lead additive puts future availability of the fuel at risk. Efforts to develop and certify a suitable replacement fuel are explained, along with the economic and technical challenges faced by that task.

Air Cargo Trends

Kentucky is the home to several significant cargo airports, including Louisville International Airport-Standiford Field, where UPS Worldport makes it one of the busiest cargo airports in the world. Cincinnati/Northern Kentucky International Airport (CVG) experienced wide swings in air cargo activity when integrated express carrier DHL moved its operation to Wilmington, Ohio in 2003, only to return in 2009. Growth is expected to continue at CVG, spurred on by Amazon's 2017 announcement that it planned to build a \$1.5 billion Prime Air hub at CVG to accommodate an estimated 200 daily departures.

The chapter also looks at air cargo activity at two other commercial service airports – Blue Grass Airport in Lexington, and Barkley Regional Airport. Details are provided on the decline in air cargo activity at these two airports.

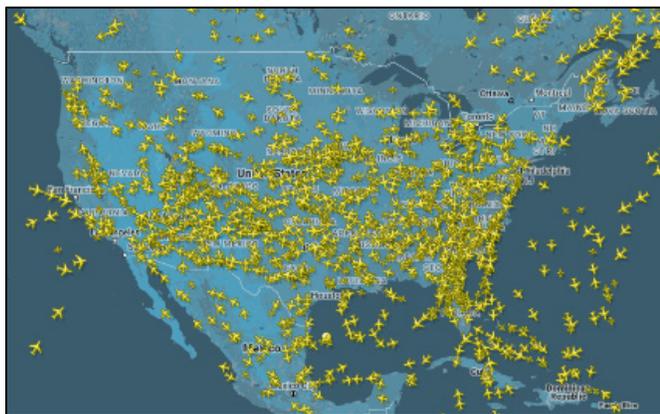
Multimodal Issues

Since aviation does not operate in a vacuum, this chapter examined other modes of transportation that could influence demand for aviation services. This included transportation modes such as bus, light rail, passenger rail, and freight, each of which was assessed for how it might impact aviation demand, either positively or negatively. The likelihood of interlining between airports and rail is assessed as not economically viable. Trucking is examined in its capacity to both compete with air cargo and its importance as a link in the air cargo supply chain.

Technology Trends

While numerous technological advances are evident in aviation, this chapter focused on three specific technology trends in aviation – implementation of the Next Generation Air Transportation System (NextGen), the growth in unmanned aerial vehicles, and the wide area augmentation system.

The chapter explains the basic components of the NextGen system and how the FAA plans to transform the air traffic control system through its use, making the system more efficient and safer. Critics of NextGen point out that the FAA is significantly over budget and behind schedule with implementation. Additionally, challenges remain in terms of equipping the aircraft fleet with automatic dependent surveillance-broadcast (ADS-B) equipment, a key component for making the NextGen system operate as planned. The cost is significant, especially for the general aviation fleet.



The section on unmanned aerial vehicles (UAV) explains how growth has been accelerated by improvements in engine technology, battery life, and miniaturization of components. While there are a variety of potential uses of UAVs, which are highlighted in the chapter, numerous challenges remain, including how to safely integrate them into the national airspace system. Since the FAA is still working to implement a complete UAV regulatory framework, KDA has served as a clearing house for UAV issues and activities in the state.

The wide area augmentation system (WAAS) transformed the global positioning system (GPS) by enhancing the accuracy of both horizontal and vertical position determination. WAAS allowed GPS to be used for instrument approach procedures that rivaled the best traditional methods, such as the instrument landing system. More than half the airports in Kentucky make use of WAAS-enabled instrument approaches, increasing the safety and utility of these airports.

More details on the aviation issues assessed in this study are available in Chapter 4 of this report.

Chapter 5 – Unique Aspects of Aviation in Kentucky

This chapter examined several aspects of aviation that are uniquely found in Kentucky, along with tax policies in Kentucky and surrounding states.

Aviation Education

Kentucky's aviation system is supported by a strong aviation education network that starts at the high school level. A variety of aerospace courses are offered at 37 Kentucky high schools, all aimed at promoting a science, technology, engineering, and math (STEM) curriculum.

Kentucky offers numerous aeronautical education opportunities beyond high school. Eastern Kentucky University provides college degrees in several aviation topics, ranging from aerospace management to aerospace technology, along with flight instruction. An airframe and powerplant maintenance program is offered by Somerset Community College.

Kentucky's airports directly support aviation education through their flight training efforts. Out of Kentucky's 59 system airports, flight schools are found at 29 of them. Even those airports without flight schools contribute to aviation education by supporting flight training operations. Approximately 78 percent, or 46 of the system airports, reported that some type of flight training took place at their airport.



Aviation Agricultural Activity

Aviation contributes to the success of Kentucky's agricultural industry. In 2015, crops grown on more than 6 million acres of farmland produced \$2.8 billion of revenue in Kentucky. Aerial applicators supported production by applying fertilizers, pesticides and aerial seeding to farmland in need. Pesticides alone were applied to an estimated 875,000 acres of Kentucky farmland by aircraft. More than half of Kentucky's system airports support this valuable activity, with 35 reporting that one or more aerial applicators operate from their airfield during the year.

Aviation also supports the famous equine industry in Kentucky, which produces \$1.1 billion in annual economic activity in the state. Companies dedicated to the movement of horses by air using specialized aircraft have grown up around Kentucky's Thoroughbred breeding industry. Kentucky is home to two of the top five U.S. airports involved in horse transportation – Louisville International Airport and Blue Grass Airport in Lexington, the “Horse Capital of the World.”

Aviation in Medical Care

Aviation plays a crucial role in Kentucky's healthcare system, enabling patients, medical personnel, and medical supplies to move quickly and efficiently around the Commonwealth. Five air ambulance operators serve the Commonwealth and two of them have established their operational headquarters in Kentucky. These companies maintain 31 air medical bases in Kentucky, enabling them to rapidly respond to medical emergencies, where minutes can make the difference between life and death. These bases are located at both airports and hospitals, with 10 airports supporting air ambulance bases. Beyond these 10 airports, nearly 80 percent of Kentucky's system airports reported air ambulance operations taking place at their facility.



Minimum facilities recommended to support air ambulance operations are analyzed and airports meeting these recommended minimums are identified.

Evaluation of Neighboring State Tax Policies and Practices

State tax policies are known to have broad influence on aviation activities within a state. An analysis of various tax policies of the seven states bordering Kentucky reveals ways in which Kentucky was, and was not, competitive with these states. The areas in which Kentucky was competitive with neighboring states were aircraft sales taxes and aircraft maintenance. Kentucky exempts aircraft from sales taxes in cases of an aircraft trade-in or when the seller is not an aircraft dealer. Kentucky does not provide an exemption for buyers that fly the aircraft out of Kentucky,

unlike most of Kentucky's adjacent states, which can encourage aircraft sellers to conduct the transaction outside of Kentucky.

Kentucky's sales tax exemption on labor performed while doing aircraft maintenance puts the state on par with most of its neighbors, with West Virginia the only adjacent state that taxes aircraft maintenance labor. Kentucky does apply sales tax to aircraft parts used in maintenance, while Illinois, Indiana, Missouri, and Ohio do not. These tax exemptions may offer enough incentive for aircraft owners to seek aircraft maintenance services outside of Kentucky since aircraft mobility makes it easy to do so.

Kentucky was found to have nearly the highest aviation fuel taxes compared with its neighbors. Only Illinois had higher jet fuel taxes, while Illinois and Ohio were the only states to top Kentucky's taxes on avgas.

Like the majority of states, Kentucky does not exempt aircraft from property taxes. A property tax exemption policy, such as those in Illinois, Indiana, and Ohio, could encourage aircraft ownership in Kentucky.

More details on Kentucky's unique aviation activities and tax policy comparison are available in Chapter 5 of this report.

Chapter 6 – Forecast of Aviation Demand

The forecasts of aviation activity consisted of general aviation based aircraft, general aviation operations, commercial operations, enplanements, and air cargo tonnage. These forecasts were developed following a thorough review of industry forecasts, including the FAA's Terminal Area Forecast and its Aerospace Forecast. Aspects of these forecasts were incorporated into the SASP forecasts developed for Kentucky's airports.



The baseline for Kentucky aviation forecasts is 2015. Multiple forecasts were developed for each aviation activity, using various data sets that could correlate with that aviation activity. Data used included Kentucky population growth rates and national growth rates for general aviation activity. Both top-down, where every airport was treated in a similar manor, and bottom-up, where the forecast for each airport was adjusted based on a factor relevant to the airport, methods were used to develop these forecasts. Certain airports also had additional adjustments made for expected future events, such as the opening of a flight school or expansion of airport facilities. From these several forecasting methodologies, preferred forecasts were selected.

The overall results of the forecasting effort are shown in **Table 1-1**. It can be seen that general aviation activity is expected to increase at annual average growth rates of between 0.3 and 0.5 percent.

Commercial aviation is forecast to expand at average annual growth rates in excess of 1 percent, with air cargo experiencing a significant amount of growth over the planning period.

Table 1-1
Summary of Kentucky Aviation Forecasts

| Preferred Forecast | 2015 | 2020 | 2025 | 2035 | AAGR 2015- 2035 | Total Change 2015-2035 |
|-------------------------------------|-----------|-----------|-----------|-----------|-----------------------|------------------------------|
| General Aviation Forecasts | | | | | | |
| Based Aircraft | 1,732 | 1,794 | 1,812 | 1,852 | 0.34% | 6.93% |
| GA Operations | 849,265 | 889,521 | 906,520 | 941,777 | 0.52% | 10.89% |
| Commercial Service Forecasts | | | | | | |
| Commercial Operations | 301,717 | 323,580 | 345,537 | 394,120 | 1.34% | 30.63% |
| Enplanements | 5,505,814 | 6,116,050 | 6,790,050 | 8,401,750 | 2.14% | 52.60% |
| Air Cargo Tonnage | 3,395,381 | 4,417,888 | 5,750,099 | 9,750,120 | 5.42% | 187.16% |

Source: Airport Inventory and Data Survey, Cincinnati/Northern Kentucky International Airport (2016), Cincinnati/Northern Kentucky International Airport 2035 Master Plan Update (2013), FAA Aerospace Forecast Fiscal Years 2016-2035 (2016), Kentucky Department of Aviation (2016), Louisville International-Standiford Field (2016), U.S. Census Bureau (2016).

More details on Kentucky SASP forecast are available in Chapter 6 of this report.

Chapter 7 – On-Airport Economic Activity

In addition to the benefits of rapid and efficient travel that airports offer passengers and goods, they also act as economic engines for communities and regions. The jobs and payroll that are supported by Kentucky's airport directly impact the local economies in which they exist. As part of the inventory effort, this study gathered data on the direct jobs found on each of the 59 system airports by tabulating each aeronautical business or organization found on the airport that employed one or more workers. Data was also gathered on the wages, salary, and benefits paid to these employees. In cases where data was not directly available, estimates were made using other data sources and the in-house database compiled by the consulting team over years of doing detailed economic impact studies.

This study found that Kentucky's system of 59 airports provides employment opportunities for more than 23,300 jobs, and that those jobs create more than \$1.4 billion in payroll annually.

More details on the direct economic impacts of Kentucky's airports are in Chapter 7 of this report.

Chapter 8 – Airport Role Analysis and Benchmarks

A key task of an airport system plan is categorizing airports into roles based on certain criteria. Doing so provides a broad overview of the airport system by showing how many airports fall into each role. It provides a useful framework for analyzing airport system performance, both for the overall system and for segments within that system. Finally, recommended facility standards can be developed for each airport role that help airports in performing their assumed functions.

KDA elected to assign airport roles using a flow chart that logically and systematically determines an airport's role. It begins by defining commercial service airports as those currently serving commercial airlines. Next, it uses four objective factors to categorize the general aviation airports into one of four roles. The four factors used are:

- Type of fuel sold
- Runway length
- Ceiling minimums for the airport's best instrument approach procedure
- The relative number of jet departures

These four factors were selected based on their ability to categorize an airport’s economic potential. The process resulted in Kentucky’s system airports falling into one of five roles, described as follows:

Commercial Service Airports: These airports serve commercial airlines and are grouped separately from the general aviation airports in order to focus on the distinctions among the general aviation airports.

Economic Level 1: These general aviation airports have the greatest economic potential. In general, these airports have 20 or more based aircraft, provide jet fuel, have the most effective instrument approach procedures, and offer pilot services such as automated weather reporting.

Economic Level 2: These general aviation airports have significant economic potential. In general, these airports have 10 or more based aircraft, provide jet fuel, and have some type of instrument approach.

Economic Level 3: These general aviation airports have developing economic potential. In general, these airports provide avgas and some offer additional services, such as automated weather reporting or an instrument approach.

Economic Level 4: These general aviation airports have limited economic potential. Some, but not all, of these airports offer avgas. Most do not have an instrument approach.

When all of Kentucky’s 59 system airports are analyzed using this process, more than half are categorized in roles that either provide commercial airline service, or have the potential for significant or better economic potential, as shown in **Table 1-2**. This is one indicator of how well developed the Kentucky airport system is. **Figure 1-2** presents the airports by role.

**Table 1-2
Summary of Airport Roles in Kentucky SASP**

| Airport Role | Number of Airports |
|-----------------------------|--------------------|
| Commercial Service Airports | 6 |
| Economic Level 1 | 24 |
| Economic Level 2 | 8 |
| Economic Level 3 | 10 |
| Economic Level 4 | 11 |

Source: Airport inventory, CDM Smith

A key function of identifying airports by role is using those roles to evaluate how capable the airport is at fulfilling that role. This is accomplished by establishing recommended benchmarks for certain performance measures within each airport role.

There are two purposes behind these benchmarks. The first is to provide a means to measure how well the system is performing in terms of the percentage of airports within each role that meet the benchmark for a particular performance measure. The second purpose is to identify areas of improvement for individual airports that will allow the aviation system to perform more effectively.

It should be noted that these are recommendations, not requirements, and that airports may be able to fulfill their role even without all recommended facilities. Additionally, any recommended improvements are based on a high level analysis of the system and still need to be vetted and supported by local planning efforts at the individual airport level. It should not be inferred that these projects meet FAA justification criteria or that they are endorsed by the FAA or KYTC.



The benchmarks associated with these performance measures present the minimum level of development that the airport should strive for to meet its recommended system role. **Table 1-3** lists each performance measure and associated benchmark for each of the respective airport roles.

Table 1-3
Performance Measures and Benchmarks

| Performance Measure | Commercial Service Airports | Economic Level 1 Airports | Economic Level 2 Airports | Economic Level 3 Airports | Economic Level 4 Airports |
|--------------------------------|-----------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Runway Length | 6,500 ft. | 5,000 ft. | 4,000 ft. | 3,200 ft. | 2,400 ft. |
| Runway Lighting | High | Medium | Medium | Medium | N/A |
| Approach Lighting System | ALS | N/A | N/A | N/A | N/A |
| Instrument Approach Procedure | APV | APV | APV | Non-precision | Visual |
| Fuel | Jet-A, 100LL | Jet-A, 100LL | Jet-A, 100LL | 100LL, Self-Service | N/A |
| Airport Parking | Informational only | Informational only | Informational only | Informational only | Informational only |
| Snow Removal | On-airport | On-airport | Off-airport | Off-airport | N/A |
| Terminal Building | Yes | Yes | Yes | Yes | Yes |
| Taxiway Type | Full Parallel | Full Parallel | Partial Parallel | Partial Parallel | Turnarounds |
| Visual Approach Aids | PAPI | PAPI | PAPI | PAPI | N/A |
| Runway End Identifier Lights | REILs if no ALS | REILs if no ALS | REILs if no ALS | REILs | N/A |
| Automated Weather Reporting | AWOS | AWOS | AWOS | AWOS | N/A |
| Airport Beacon | Beacon | Beacon | Beacon | Beacon | N/A |
| Windsock | Windsock | Windsock | Windsock | Windsock | Windsock |
| Airfield Fencing | Complete | Complete | Complete | Partial | Partial |
| Security Access Control System | Yes | Yes | Yes | Yes | N/A |

ALS – Approach lighting system; APV – Approach with vertical guidance; AWOS – Automated weather observing system; N/A – Not applicable; PAPI – Precision approach path indicator; RDC – Runway design code; REIL – Runway end identifier lights
Source: CDM Smith.

More details on airport role analysis, performance measures, and benchmarks are available in Chapter 8 of this report.

Chapter 9 – System Evaluation – Stewardship

The evaluation of Kentucky’s airport system is presented in three chapters, beginning with an examination of how well airport sponsors act as appropriate stewards of their aviation assets. This evaluation took into account factors that could limit future development at each airport, land use controls intended to protect airports, reported pavement conditions at each airport, standardized leasing policies, financial commitments from local municipalities, adherence to state and federal environmental regulations, and on-airport wildlife management initiatives.

Factors affecting future airport development were classified as either physical, environmental, financial, or community relations. Physical restrictions were the most common, affecting 59 percent of system airports, followed by environmental issues (54 percent), and financial constraints (47 percent). Only 15 percent of airports reported community relations issues.

Land use controls are in effect around only a minority of airports. Zoning for land use or height was reported at 20 percent of system airports, while only 8 percent employed any type of noise abatement procedures.

The review of pavement conditions, as reported in the 2014 Kentucky Airport Pavement Management System, which covered 52 of the 59 system airports, found that approximately 90 percent of primary runways were in satisfactory condition or better. More than 80 percent of taxiways at these airports were evaluated as satisfactory or better. Apron pavement was assessed as satisfactory or better at nearly 90 percent of the evaluated airports. Hangar area pavement was found to be in need of maintenance, with approximately 50 percent of airports reporting its condition as satisfactory or better.

Good airport stewards establish a level playing field for businesses by establishing standardized leasing terms and periodically reviewing those terms. According to information reported by system airports, 78 percent make use of standardized leases and have reviewed them within the past five years.

Financial contributions from airport sponsors are a good indicator of stewardship. Among Kentucky's system airports, 86 percent reported receiving financial support from their sponsors.

Several aspects of environmental stewardship were examined. The results found that 86 percent of system airports reported having a spill prevention, control, and countermeasure plan, while 83 percent have stormwater pollution prevention plan. The Kentucky Division of Water requires training as part of their permitting process, and 49 percent of Kentucky's airports reported as being up to date on this training. Approximately 68 percent of system airports reported being current on their Tier II reporting. Finally, 66 percent of Kentucky's airports reported that their best management practices relating to the environment were up to date.

The degree to which airports protect their users from wildlife was evaluated on the basis of the existence of a wildlife management plan. Only 17 percent of system airports reported having such a plan.

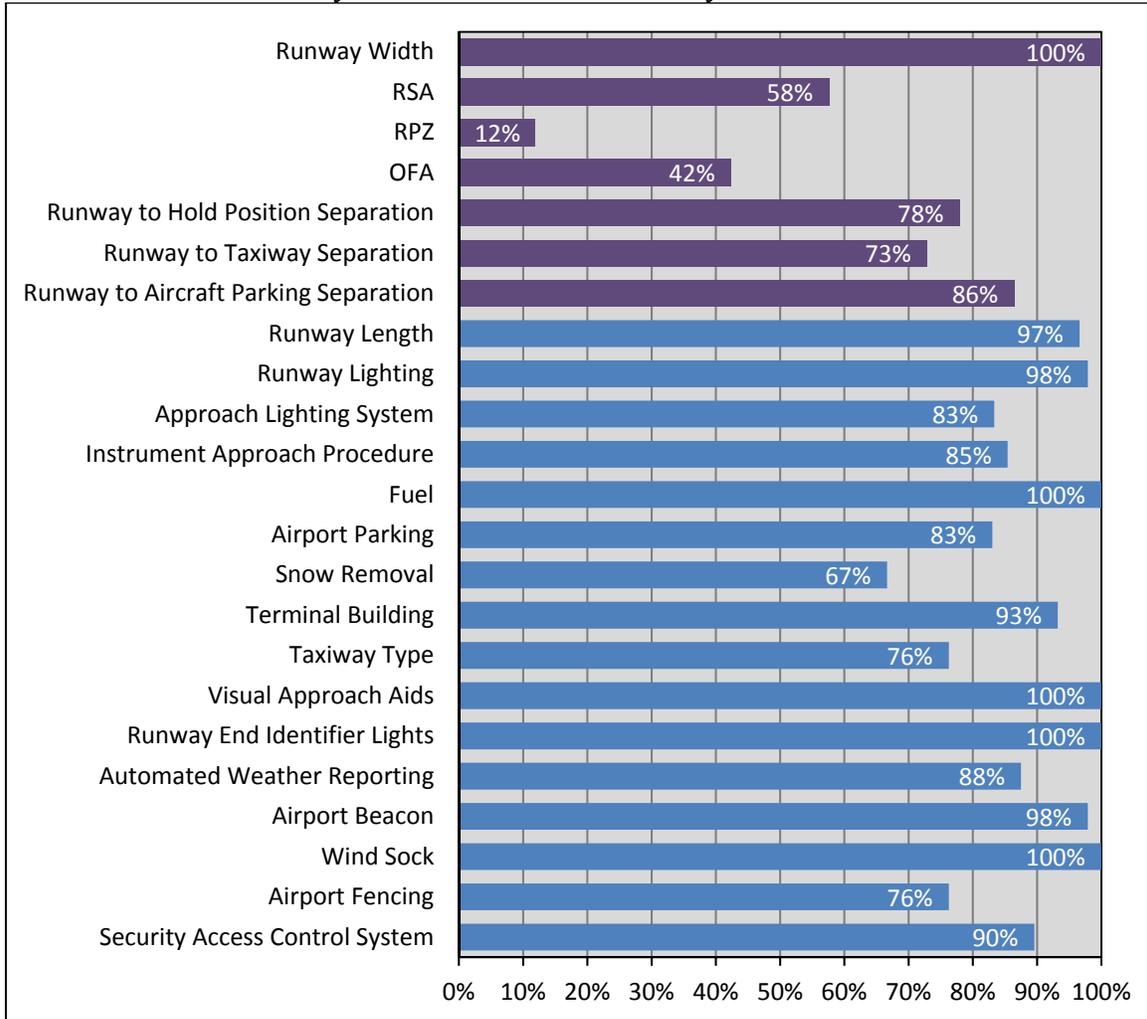
More details on the evaluation of airport stewardship are available in Chapter 9 of this report.

Chapter 10 – System Evaluation – Facilities and Services

The evaluation of the airport system's facilities and services examined certain aspects of FAA airport design standards and recommended facilities and services based on the role of each airport. The FAA design standards included certain separation design standards, such as the distance between the runway and parallel taxiway, all based on the runway design code of the runway. It also included a high level assessment of the runway safety area and object free area of the primary runway, and the degree of control the airport exercised over the runway protection zone for the primary runway. The facilities and services evaluated were the same as those listed in Table 1-3.

Figure 1-3 summarizes the percent of the system airports that meet their respective design standards and benchmarks.

**Figure 1-3
Summary of Facilities and Services System Evaluation**



Source: Airport Inventory and Data Survey, CDM Smith, FAA Form 5010, Google Maps.

Note: Purple bars represent performance measures evaluated using RDC, while blue bars represent performance measures evaluated using airport role benchmarks.

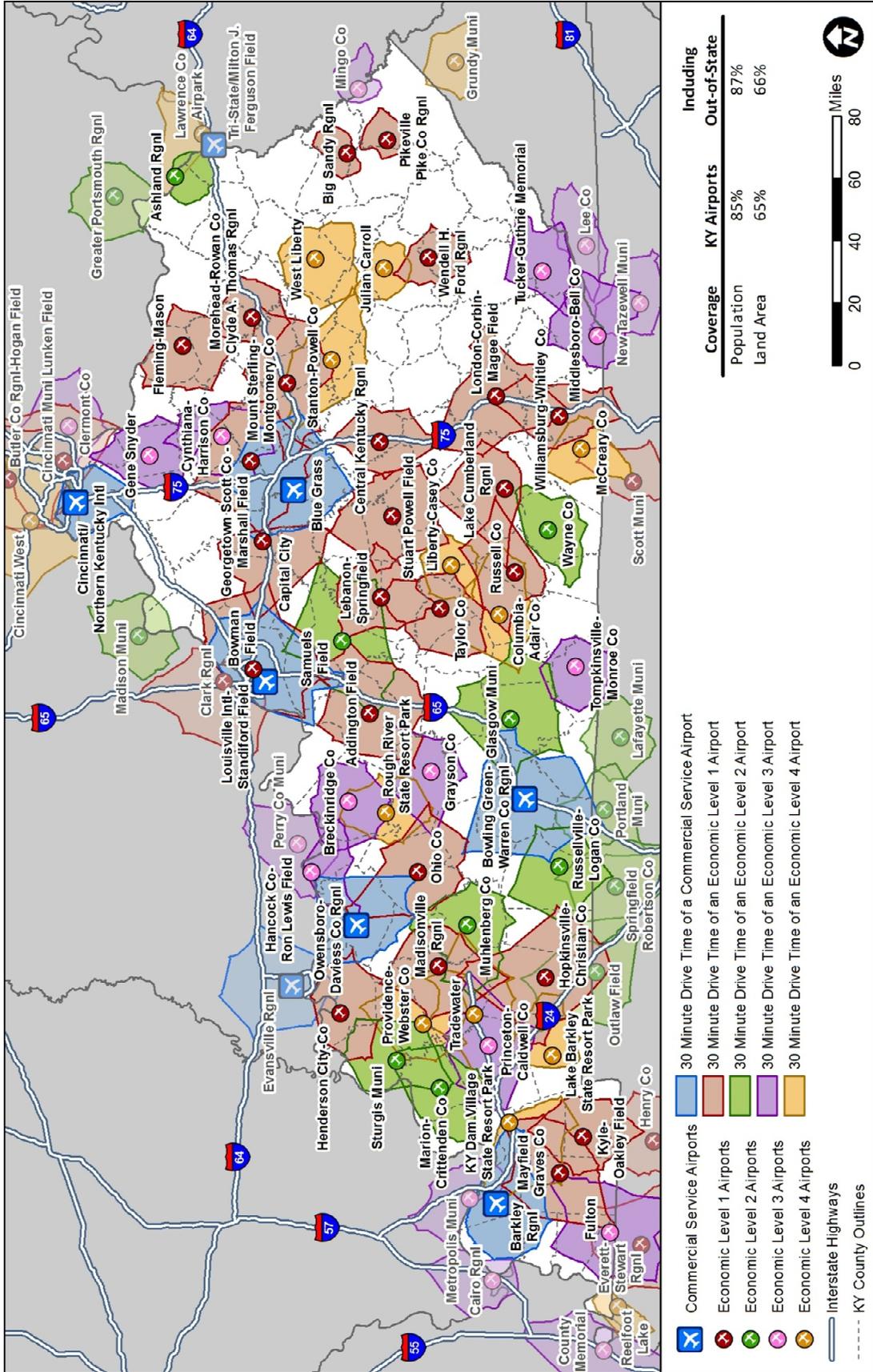
More details on the evaluation of the system facilities and services are available in Chapter 10 of this report.

Chapter 11 – System Evaluation – Geographic Coverage and Gaps

The evaluation of geographic coverage examines how well the airport system provides overall access to the system, as well as specific service and facilities. This is accomplished by using geographic information systems (GIS) to estimate a market area for each airport as determined by a drive time from the airport (typically 30 minutes). Coverage is expressed in terms of the land area or population encompassed within these drive time market areas.

This analysis found that 85 percent of Kentucky’s population was within the 30-minute drive time market areas of system airports, as shown in **Figure 1-4**. Additional analysis found that 75 percent of the population is within 60 minutes of an airport offering commercial service, including out-of-state airports.

Figure 1-4
Population and Land Area Coverage of the Kentucky Airport System, by Role



Source: CDM Smith, U.S. Census Bureau.

The analysis also determined that gaps exist in eastern Kentucky and northern Kentucky. It is recommended that new system airports be considered for these underserved areas. KDA and the local sponsor have already undertaken steps toward building new general aviation airports in Letcher County and Gallatin County to address portions of these gaps.

Additional geographic analyses looked at the coverage provided by airports with various facilities and capabilities, including coverage by:

- Airports with runway lengths of 5,000 feet or more
- Airports with different categories of instrument approaches
- Airports with aviation fuel
- Airports serving business user needs

More details on the geographic coverage of the airport system are available in Chapter 11 of this report.

Chapter 12 – Recommended System and Cost Estimates

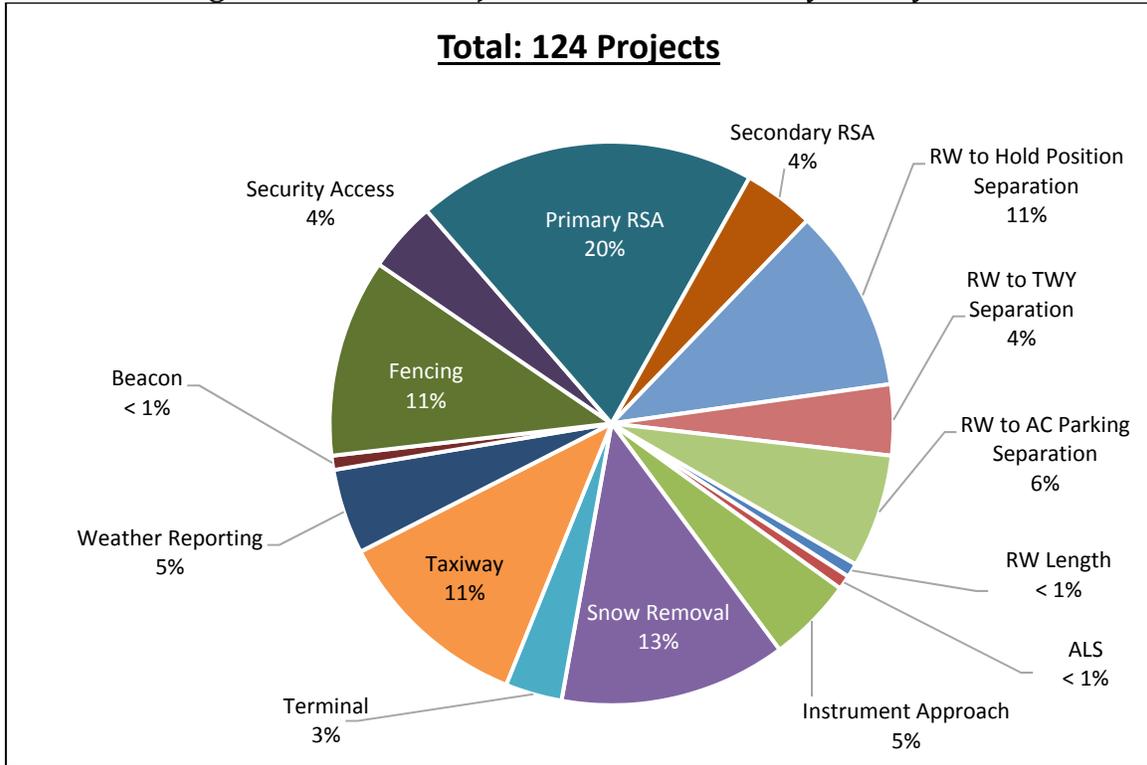
Based on the various evaluations of the airport system and individual airports, recommendations were developed to enhance the system performance and to increase the safety and effectiveness with which airports function in their roles.

These recommendations addressed deficiencies in runway safety areas, inadequate airport design standards, and facilities that did not meet recommended benchmarks based on the role the airport served. The geographic coverage analysis supported ongoing planning efforts for two new airports for the system – one in Gallatin County and the other in Letcher County.

Together these recommendations resulted in 124 capital projects at 47 Kentucky airports, as shown in **Figure 1-5**. Taxiway improvements, which help airports operate more efficiently and safely by reducing runway occupancy times, and primary RSA improvements, make up the bulk of the costs, accounting for nearly three-quarters of the total \$193 million cost.

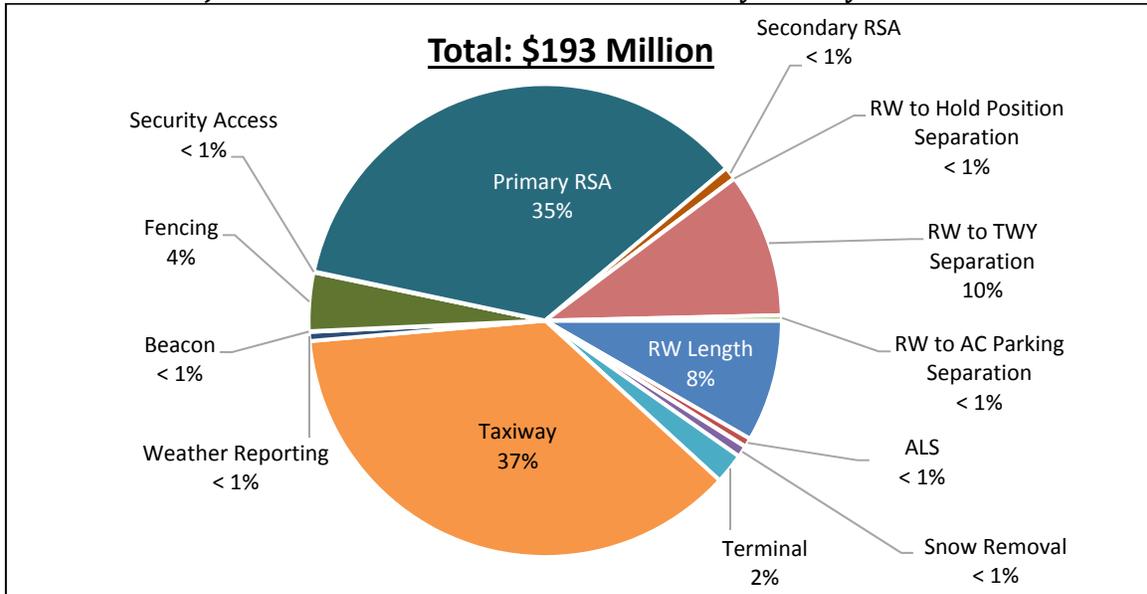
Figure 1-6 shows the cost allocation of the various types of recommended projects.

Figure 1-5
Percentage of Total SASP Project Recommendations by Facility or Service



Source: CDM Smith.

Figure 1-6
Percentage of Total SASP Project Recommendation Estimated Costs by Facility or Service



Source: CDM Smith, Connico, Stantec.

These cost estimates do not include the expense involved with the planning and construction of the two new airports recommended for the system. Preliminary cost estimates for these two new

facilities place the combined cost on the order of \$48 million, bringing the total cost of all system plan recommendations to \$241 million.

Lastly, it is important to note that the planning recommendations developed in this system plan are only one element that the Kentucky Department of Aviation (KDA) uses as part of a multi-tiered airport planning approach. KDA expects that the Kentucky Airport Pavement Management System and Statewide Airport Obstruction Analysis Report will also result in recommendations and planned projects. In addition, individual airport Capital Improvement Plans include planned projects. Projects resulting from these planning efforts may take priority over SASP recommendations, especially in cases of safety.

More details on the system recommendations and cost estimates are available in Chapter 12 of this report.